To: Darden, Richard L CIV USARMY CEPOA (US)[Richard.L.Darden@usace.army.mil]
Cc: Kissinger, Lon[Kissinger.Lon@epa.gov]; Eckley, Chris[Eckley.Chris@epa.gov]; Nogi, Jill[nogi.jill@epa.gov]; Soderlund, Dianne[Soderlund.Dianne@epa.gov]; Allnutt, David[Allnutt.David@epa.gov]
From: Jen, Mark
Sent: Mon 2/13/2017 9:57:32 PM
Subject: RE: Donlin Gold EIS - RE: EPA Comments on the Donlin Gold Project Health Impact Assessment

Thanks Richard!

EPA appreciates your consideration of our comments on the Donlin Gold Project DEIS and HIA.

We look forward to reviewing the scope of work for the proposed human health risk evaluation for mercury, arsenic, and antimony. It would be worthwhile to have a meeting after our review and comment of the SOW.

Regards,

Mark

-----Original Message-----
From: Darden, Richard L CIV USARMY CEPOA (US) [mailto:Richard.L.Darden@usace.army.mil]
Sent: Wednesday, February 08, 2017 10:44 AM
To: Jen, Mark <Jen.Mark@epa.gov>
Cc: Newman, Sheila M CIV USARMY CEPOA (US) <Sheila.M.Newman@usace.army.mil>; Craig, Bill <bill.m.craig@aecom.com>; Bruno, Jeff J (DNR) <jeff.bruno@alaska.gov>; sarah.yoder@alaska.gov; Kissinger, Lon <Kissinger.Lon@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>; Kennedy, Timothy A CIV USARMY USACE (US) <Timm.A.Kennedy@usace.army.mil>; Steele, Marie C (DNR) <marie.steele@alaska.gov>
Subject: Donlin Gold EIS - RE: EPA Comments on the Donlin Gold Project Health Impact Assessment

Hi Mark,

Thanks for your message last Friday. It came to us at a very good time for a couple of reasons. In the weeks following the December (2016) Technical Discussions we have been actively engaged in following-up internally on our draft responses to comments on health risk, as well as interacting with Donlin about additional information that may help evaluate and communicate the proposed project's likely contribution to those risks.

We actually met with Donlin yesterday to discuss a proposed scope of work for their consultant ERM to prepare a human health risk evaluation that will focus on mercury, arsenic, and antimony. Based on our discussion with them, Donlin plans to prepare a scope of work that can be made available to EPA for review prior to any work taking place. I expect that this scope of work will be available as soon as this Friday (Feb 10). I will plan to send it to you for your information and review, and then be happy to facilitate a meeting among EPA, Donlin and the Corps/AECOM to discuss the proposed scope of work.

Based on the comments received and the discussions we have had during the comment analysis period, we are looking forward to additional evaluation and results that can be used to characterize the proposed project's role in these types of health risks.

Thanks,
Richard

Richard L. Darden, Ph.D.

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(907) 753-5710

-----Original Message-----
From: Jen, Mark [mailto:Jen.Mark@epa.gov]
Sent: Friday, February 03, 2017 4:38 PM
To: Darden, Richard L CIV USARMY CEPOA (US) <Richard.L.Darden@usace.army.mil>
Cc: Newman, Sheila M CIV USARMY CEPOA (US) <Sheila.M.Newman@usace.army.mil>; Craig, Bill <bill.m.craig@aecom.com>; Bruno, Jeff J (DNR) <jeff.bruno@alaska.gov>; sarah.yoder@alaska.gov; Kissinger, Lon <Kissinger.Lon@epa.gov>; Eckley, Chris <Eckley.Chris@epa.gov>
Subject: [EXTERNAL] EPA Comments on the Donlin Gold Project Health Impact Assessment

Greetings Richard,

As you recall, one of EPA's comments on the Donlin Gold Project Draft EIS was regarding the Health Impact Assessment prepared by the Alaska Department of Health and Social Services. EPA expressed concerns that the HIA was not made available for public review. As the interim Corps Project Manager, Sheila provided the cooperating agencies with a copy of the Donlin HIA and invited comments. We understand that ADHSS does not plan to make revisions to the HIA. However, Sheila indicated that cooperating agency comments on the HIA would be addressed in the Donlin EIS.

Please find attached EPA comments on the Donlin Gold Project HIA. These comments have been prepared by Lon Kissinger. He is an EPA Risk Assessor in our Regional Office in Seattle. Questions regarding these comments should be directed to Lon at (206) 553-2115 or kissinger.lon@epa.gov <mailto:kissinger.lon@epa.gov> . Lon's expertise is in the area of human health risks posed by exposure to hazardous chemicals. These comments are largely limited to that area. He has included cross references to similar comments EPA provided on the DEIS.

Overview

The Donlin Gold Project Health Impact Assessment (HIA) prepared under the direction of the Alaska Department of Health and Social Services delineates a standard exposure/risk assessment sequence of identifying Source → Exposure → Dose → Health Effect(s). The HIA offers a conceptual site model showing the sources of contaminants, their transport via environmental media, and how individuals may come into contact with contaminants. However, the HIA does not clearly proceed with quantitative exposure and risk analyses. From EPA's perspective, creating an HIA that has the components of a Superfund (CERCLA) human health risk assessment would be beneficial with regards to organizing information and reaching conclusions. Furthermore, such an analysis would help identify data gaps. The types of receptors (e.g. hunters, anglers, residents, etc.) should be identified and their exposure to chemicals of potential concern (COPCs) for different exposure scenarios should be quantified. In particular, mercury, arsenic, and antimony should be discussed as these elements are present in environmental media in the vicinity of the proposed mine site. Cyanide should also be clearly addressed, as cyanide would be used in mine operations. Dose response (i.e. toxicity) relationships should be used

to characterize non-cancer hazards and cancer risks posed by baseline and potential Donlin related contaminants of potential concern (COPC) exposures. EPA resources for exposure and toxicity assessment should be used for this analysis. In particular, EPA's reference dose for methylmercury should be used, as well as the hair mercury concentration associated with the methyl mercury reference dose equivalent. Overall, background, and potential mine related exposures and hazards/risks should be quantified. The EPA would be interested in developing, reviewing, and/or providing feedback on a human health risk assessment for the Donlin Gold Project.

Measurements of the hair mercury concentrations of women of child bearing age are a unique resource in assessing mercury exposure and hazard. It would be helpful to present the distributions of hair mercury concentrations rather than basic statistics. There also should be some discussion as to the quality of the data with regards to adequately characterizing hair mercury for each village. What is the population of women of child bearing age in each sample? What is the uncertainty in estimates of average hair mercury concentrations? It would be helpful to consider discussing differences in hair mercury concentrations by village as well as any fish tissue mercury data and village specific consumption patterns that might assist in explaining differences. EPA recognizes that given the sample size, there may be confidentiality issues which may complicate this level of analysis. Hair methyl mercury concentrations should be interpreted with regards to EPA's reference dose equivalent hair methylmercury concentration.

Throughout the HIA, there are statements as to what contaminant concentrations would be in various environmental media. Frequently, these concentrations are developed through modeling exercises. Citations for documents supporting derivation of contaminant concentrations are provided, however, it is not possible to determine the degree of confidence in the modeling used to derive contaminant concentrations as well as the degree of uncertainty in these concentrations. Key assumptions used in modeling should also be summarized. It would be helpful if summaries of this information were included in the HIA. As has been noted in project calls, it is difficult to model mercury methylation. Some consideration should be given towards collecting empirical mercury methylation data.

A key issue is whether or not adequate environmental data are present to characterize baseline exposures to contaminants. This analysis should look at how mine operations may impact resources spatially and whether existing samples in relevant media (e.g. air, water, sediment, soil, and biota) in impacted areas. Maps of potential areas of mine influence with sample locations would help in evaluating the adequacy of existing information. The symbols to mark the sample locations should also incorporate some method for quantifying contaminant concentrations (e.g. a color gradient or symbol size). The existing presentation identifies sources of information, but does not delve into the adequacy of existing information. The adequacy of samples should be informed by data needs for risk assessment. For example, how much fish of various species do Native Alaskans consume? What are mercury concentrations in those fish species?

Thank you for your consideration of EPA's comments on the Donlin Gold Project HIA. Questions regarding our comments should be directed to Lon Kissinger at (206) 553-2115 or kissinger.lon@epa.gov <mailto:kissinger.lon@epa.gov> .

Mark S. Jen

U.S. Environmental Protection Agency, Region 10

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